

Patent claims

1. A method for signaling relating to an intended data transmission from a first radio station (MS1) to a second radio station (MS2, MS3) in an ad-hoc mode of a radio communication system (SYS),
characterized in that
 - the communication of radio stations (MS1, MS2, MS3) in the ad-hoc mode takes place using a frequency band which is divided into a plurality of sub-bands (SUB1, SUB2, SUB3), wherein the first radio station (MS1) is assigned one or more first sub-bands (SUB1) and the second radio station (MS2, MS3) is assigned one or more second sub-bands (SUB2, SUB3) for communicating, and that
 - the first radio station (MS1) sends a notification (RTS) of the intended data transmission to the second radio station (MS2, MS3) on one or more sub-bands (SUB1, SUB2, SUB3) corresponding to a first number of sub-bands,
wherein the sub-band or the sub-bands of the first number of sub-bands consist of
 - one or more of the first sub-bands (SUB1) and/or
 - one or more of the second sub-bands (SUB2, SUB3).
2. The method as claimed in Claim 1,
characterized in that
the first radio station (MS1) detects a current occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3) prior to sending the notification (RTS), and
the sub-band or the sub-bands of the first number of sub-bands consist of one or more sub-bands which are

currently detected as not occupied.

3. The method as claimed in Claim 2,
characterized in that
in the event that the data (DATA) must be sent to the
second radio station (MS2) as sole addressee, the sub-
band or sub-bands of the first number of sub-bands
consist of a set of the unoccupied first sub-band or sub-
bands, assuming at least one first sub-band (SUB1) is
detected as currently unoccupied.
4. The method as claimed in Claim 2 or 3,
characterized in that
in the event that the data (DATA) must be sent to the
second radio station (MS2) as sole addressee, the sub-
band or sub-bands of the first number of sub-bands
consist of a set of the unoccupied second sub-band or
sub-bands (SUB2, SUB3), assuming the first sub-bands
(SUB1) are detected as currently occupied and at least
one second sub-band (SUB2, SUB3) is detected as currently
unoccupied.
5. The method as claimed in one of the Claims 2 to 4,
characterized in that
if the data (DATA) must be sent to a third radio station
(MS3) as an addressee in addition to the second radio
station (MS2), said third radio station (MS3) having been
assigned one or more third sub-bands (SUB3) for
communicating, the sub-band or sub-bands of the first
number of sub-bands can consist of a set of the
unoccupied first sub-band or sub-bands and a set of the
unoccupied second sub-band or sub-bands (SUB1, SUB2),
assuming at least one first sub-band (SUB1) and at least
one second sub-band (SUB2) are detected as currently

unoccupied.

6. The method as claimed in one of the Claims 2 to 5, characterized in that if the data (DATA) must be sent to a third radio station (MS3) as an addressee in addition to the second radio station (MS2), said third radio station (MS3) having been assigned one or more third sub-bands (SUB3) for communicating, the sub-band or sub-bands of the first number of sub-bands consist of a set of the unoccupied second sub-band or sub-bands (SUB2), assuming the first sub-bands (SUB1) are detected as currently occupied and at least one second sub-band (SUB2) is detected as currently unoccupied.
7. A method, in particular as claimed in one of the Claims 1 to 6, for signaling relating to an intended transmission of data (DATA) from a first radio station (MS1) to a second radio station (MS2, MS3) in an ad-hoc mode of a radio communication system (SYS), characterized in that
 - the communication of radio stations (MS1, MS2, MS3) in the ad-hoc mode takes place using a frequency band which is divided into a plurality of sub-bands (SUB1, SUB2, SUB3), wherein the first radio station (MS1) is assigned one or more first sub-bands (SUB1) and the second radio station (MS2, MS3) is assigned one or more second sub-bands (SUB2, SUB3) for communicating, that
 - the second radio station (MS2, MS3) receives a notification (RTS) from the first radio station (MS1), on one or more sub-bands corresponding to a first number of sub-bands, of the intended data transmission from the first radio station (MS1) to

- the second radio station (MS2, MS3), and that
- following the receipt of the notification (RTS), the second radio station (MS2, MS3) sends an acknowledgement (CTS) to the first radio station (MS1), on one or more sub-bands corresponding to a second number of sub-bands, of the intended data transmission, wherein the sub-band or sub-bands of the second number of sub-bands consist of
 - one or more of the first sub-bands (SUB1) and/or
 - one or more of the second sub-bands (SUB2, SUB3).
8. The method as claimed in Claim 7, characterized in that prior to sending the acknowledgement (CTS), the second radio station (MS2, MS3) detects a current occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3), and the sub-band or sub-bands of the second number of sub-bands consist of one or more sub-bands which have been detected as currently unoccupied.
9. The method as claimed in Claim 8, characterized in that if the second radio station (MS2, MS3) detects that the sub-band or sub-bands of the first number of sub-bands are unoccupied, the sub-band or sub-bands of the second number of sub-bands correspond to the sub-band or sub-bands of the first number of sub-bands.
10. The method as claimed in Claim 8, characterized in that the sub-band or sub-bands of the second number of sub-bands correspond to a subset of the sub-bands of the

first number of sub-bands, assuming the second radio station (MS2, MS3) detects that the sub-band or sub-bands of the subset are unoccupied and that the remaining sub-band or sub-bands of the first number of sub-bands are occupied.

11. The method as claimed in one of the Claims 7 to 10, characterized in that after receiving the acknowledgement (CTS), the first radio station (MS1) sends the data (DATA) to the second radio station (MS2, MS3) on one or more sub-bands corresponding to a third number of sub-bands, wherein the sub-band or sub-bands of the third number of sub-bands consist of
 - one or more of the first sub-bands (SUB1) and/or
 - one or more of the second sub-bands (SUB2, SUB3).
12. The method as claimed in Claim 11, characterized in that the sub-band or sub-bands of the third number of sub-bands correspond to
 - the sub-band or sub-bands of the first number of sub-bands or
 - a subset of the sub-bands of the first number of sub-bands or
 - the sub-band or sub-bands of the second number of sub-bands or
 - a subset of the sub-bands of the second number of sub-bands.
13. A radio station (MS1) for communicating with another radio station (MS2, MS3) in an ad-hoc mode of a radio

communication system (SYS), including

- means (M1) for storing information via one or more first sub-bands (SUB1) which are assigned to the radio station (MS1) for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands (SUB1, SUB2, SUB3),
- means (M2) for storing information via one or more second sub-bands (SUB2, SUB3) which are assigned to the other radio station (MS2, MS3) for communicating, said sub-bands belonging to the frequency band,
- means (M3) for sending the other radio station (MS2, MS3) a notification (RTS) of an intended data transmission to the other radio station (MS2, MS3) on one or more sub-bands corresponding to a first number of sub-bands, wherein the sub-band or sub-bands of the first number of sub-bands consist of
 - one or more of the first sub-bands (SUB1) and/or
 - one or more of the second sub-bands (SUB2, SUB3).

14. The radio station (MS1) as claimed in Claim 13, having

- means (M4) for detecting a current occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3) prior to sending the notification (RTS), and
- means (M5) for selecting the sub-band or sub-bands of the first number of sub-bands depending on a detection result of the occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3).

15. A radio station (MS2, MS3) for communicating with another radio station (MS1) in an ad-hoc mode of a radio

communication system (SYS), including

- means (M7) for storing information via one or more first sub-bands (SUB2, SUB3) which are assigned to the radio station (MS2, MS3) for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands (SUB1, SUB2, SUB3),
- means (M8) for storing information via one or more second sub-bands (SUB1) which are assigned to the other radio station mobile station MS1 for communicating, said sub-bands belonging to the frequency band,
- means (M9) for receiving and analyzing a notification (RTS) from the other radio station (MS1) of an intended data transmission from the other radio station (MS1) to the radio station (MS2, MS3) on one or more sub-bands corresponding to a first number of sub-bands,
- means (M10) for sending an acknowledgement (CTS) to the other radio station (MS1), on one or more sub-bands corresponding to a second number of sub-bands, of the intended data transmission, wherein the sub-band or sub-bands of the second number of sub-bands consist of
 - one or more of the first sub-bands (SUB1) and/or
 - one or more of the second sub-bands (SUB2, SUB3).

16. The radio station (MS2, MS3) as claimed in Claim 15, having

- means (M11) for detecting a current occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3) prior to sending the acknowledgement (CTS), and

- means (M12) for selecting the sub-band or sub-bands of the second number of sub-bands depending on a detection result of the occupancy of first and/or second sub-bands (SUB1, SUB2, SUB3), and depending on the sub-band or sub-bands of the first number of sub-bands.
17. A computer program product for a radio station (MS1) in an ad-hoc mode of a radio communication system (SYS), for selecting one or more sub-bands (SUB1, SUB2, SUB3) which will be used for sending, to another radio station (MS2, MS3), a notification (RTS) of an intended data transmission from the radio station (MS1) to the other radio station (MS2, MS3), said selection being made from one or more first sub-bands (SUB1) which have been assigned to the radio station (MS1) for communicating and/or from one or more second sub-bands (SUB2, SUB3) which have been assigned to the other radio station (MS2, MS3) for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands (SUB1, SUB2, SUB3).
18. A computer program product for a radio station (MS2, MS3) in an ad-hoc mode of a radio communication system (SYS), for selecting one or more sub-bands (SUB1, SUB2, SUB3) which will be used for sending, to another radio station (MS1), an acknowledgement (CTS) of an intended data transmission from the other radio station (MS1) to the radio station (MS2, MS3), said selection being made from one or more first sub-bands (SUB2, SUB3) which have been assigned to the radio station (MS2, MS3) for communicating and/or from one or more second sub-bands (SUB1) which have been assigned to the other radio station (MS1) for communicating, said sub-bands belonging

to a frequency band which is divided into a plurality of
sub-bands (SUB1, SUB2, SUB3).

Key to Fig. 2

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Prior art